MONTANA FISH, WILDLIFE & PARKS
FISHERIES DIVISION

DRAFT ENVIRONMENTAL ASSESSMENT:
JUMPING CREEK WESTSLOPE CUTTHROAT TROUT REHABILITATION

PART I. PROPOSED ACTION DESCRIPTION

A. Type of Proposed Action: Montana Fish, Wildlife & Parks propose the use of piscicides to restore a small remnant population of westslope cutthroat trout (WCT) to 2.5 miles of upper Jumping Creek.

B. Agency Authority for the Proposed Action: Agency Authority for the Proposed Action: Montana Fish, Wildlife & Parks (MFWP) "...is hereby authorized to perform such acts as may be necessary to the establishment and conduct of fish restoration and management projects...." under statute 87-1-702. In addition, goals of WCT management in Montana as stated in the Memorandum of Understanding and Conservation Agreement for Westslope and Yellowstone Cutthroat Trout in Montana (MFWP 2007) are supported by this project. Specifically, 1) ensure the long-term, self-sustaining persistence of each subspecies distributed across their historical ranges as identified in recent status reviews, 2) maintain the genetic integrity and diversity of non-introgressed populations, as well as the diversity of life histories, represented by remaining cutthroat trout populations, and 3) protect the ecological, recreational, and economic values associated with each subspecies. The cutthroat trout conservation agreement was signed by representatives of three state agencies, five federal agencies, and nine non-government organizations.

The agreement lists five objectives to ensure the persistence of WCT in its native range in Montana. Objectives of the agreement follow with the most pertinent objectives highlighted:

Objective 1. Maintain, secure, and/or enhance all cutthroat trout populations designated as conservation populations.

Objective 2. Continue to survey waters to locate additional cutthroat trout populations and determine their distribution, abundance, and genetic status.

Objective 3. Seek collaborative opportunities to restore and/or expand populations of each cutthroat trout subspecies into selected suitable habitats within their respective historical ranges.

Objective 4. Continue to monitor cutthroat trout distributions, genetic status, and abundance using a robust, range-wide, statistically sound monitoring design.

Objective 5. Provide public outreach, technical information, inter-agency coordination, administrative assistance, and financial resources to meet the listed objectives and encourage conservation of cutthroat trout.

C. Estimated Commencement Date: July, 2008
Estimated Completion Date: October, 2010
Current Status of Project: A man-made fish barrier is currently being constructed and will be completed by summer of 2008.

D. Name and Location of the Project: Jumping Creek Westslope Cutthroat Trout Rehabilitation, Lewis and Clark National Forest.

Jumping Creek is a small first order stream that enters Sheep Creek 21 miles upstream of its confluence with the Smith River (Meagher County). The portion of stream (approximately 2.5 miles) to be treated is entirely on Lewis and Clark National Forest between 46.7939°N, -110.7753°W (downstream end) and 46.8262°N, -110.7379°W (upstream end). The nearest private land on Jumping Creek is 1.5 miles downstream from the lower end of the treatment area (Figure 1).

E. Project Size (acres affected)
Approximately 2.5 miles of stream

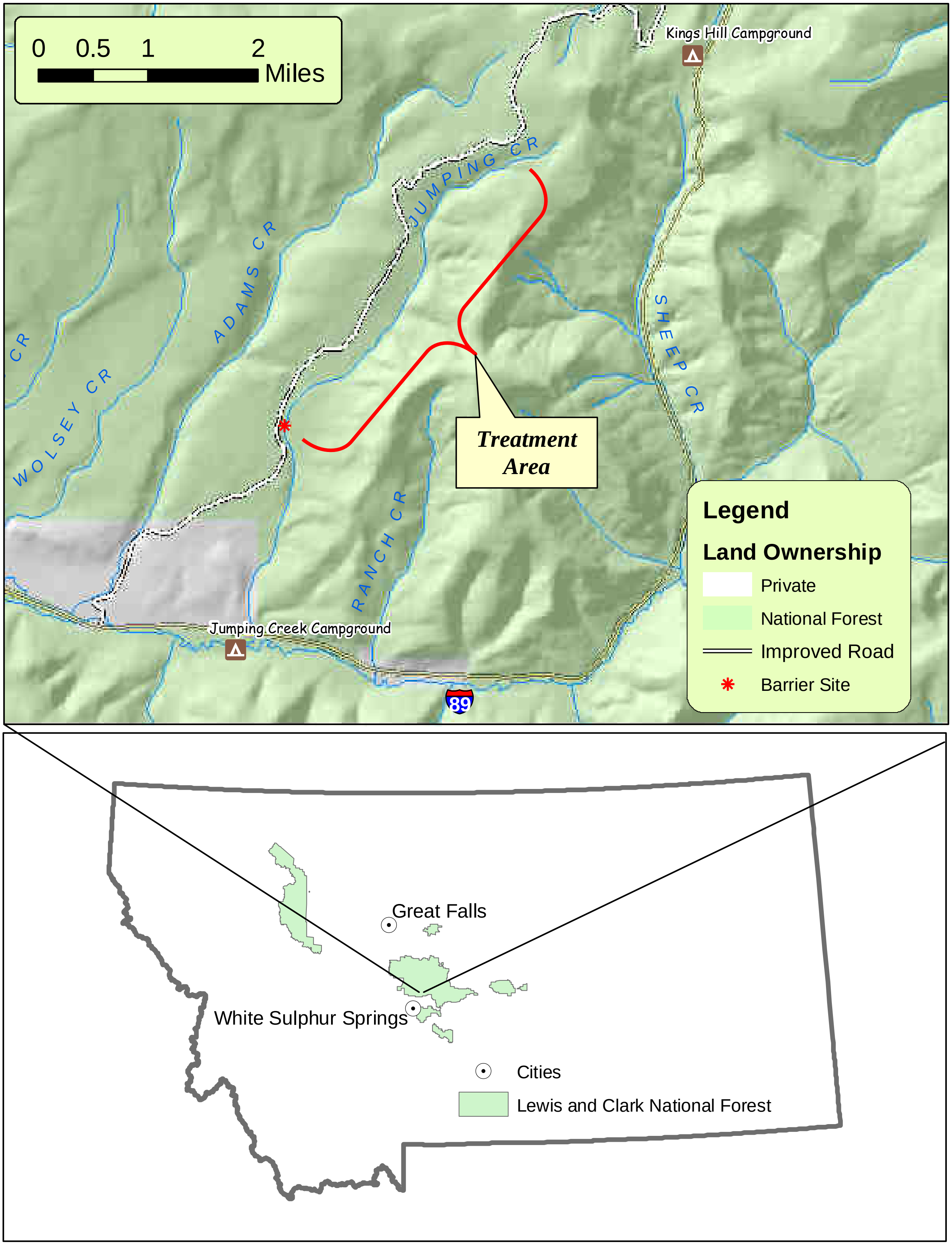

Figure 1. Jumping Creek and vicinity.

F. Narrative Summary of the Proposed Action and Purpose of the Proposed Action

1. Summary of the Proposed Action:

In 2001, a small remnant population of westslope cutthroat trout (WCT -*Oncorhynchus clarkii lewisi*) was discovered in upper Jumping Creek. Genetic analysis of fin clips taken from Jumping Creek fish in 2001, 2004, and 2005 indicated these fish were not hybridized with rainbow trout (*Oncorhynchus mykiss*). However, the total population size of WCT in Jumping Creek had been reduced to near extinction because of competition with non-native eastern brook trout (*Salvelinus fontinalis*). Estimates obtained during suppression efforts indicate no more than 150 WCT remain in Jumping Creek. Brook trout have been suppressed over the past three years with electrofishing equipment (Environmental Assessment and Record of Decision completed in 2005) to try to buoy the WCT population until a more permanent restoration solution could be developed. In 2006, a potential fish barrier site was located 2.5 miles downstream from the headwaters of Jumping Creek. A permanent falls barrier is currently being constructed at this site and should be completed in 2008. Prior to piscicide treatment, WCT will be captured and transferred to a separate and remote drainage (a separate EA will be completed for this transfer). WCT will be transferred back to Jumping Creek using eyed eggs in 2009 or 2010 after the complete removal of non-native brook trout.

Under this proposal, non-native fishes in Jumping Creek would be removed using EPA registered piscicides containing rotenone. Prenfish™, CFT Legumine™, and Prentox Cube Powder® all contain rotenone as their active ingredient and perform similarly. All the aforementioned products are listed for potential use but not all products would necessarily be used. Rotenone kills fish by blocking respiration at the cellular level. Based on the product label, rotenone would be applied to the waters of the project area at concentrations of 0.5 to 5 parts per million (ppm) of formulation. Actual concentrations applied in the treatment will likely be between 0.25 and 1 ppm of the formulation. Bioassays will be conducted prior to the treatment to determine the actual concentration used. Distance between rotenone drip stations would be based on the results of on-site bioassays and water velocities in the stream. Backpack sprayers would be used in areas of standing water and in springs and seeps on the stream margins. In addition, powdered rotenone (Prentox Cube Powder®) may be mixed with sand and gelatin and placed in springs and seeps. The project would occur during summer or early fall of 2008 and 2009. At least two treatments would be necessary to ensure complete eradication of non-native fishes. Rotenone degrades quickly in streams and typically persists for less than 14 days. Piscicides would be neutralized after passage over the constructed barrier by application of potassium permanganate at 1-6 ppm. The concentration of potassium permanganate necessary for neutralization would be determined through bioassays completed prior to treatment and according to piscicide label recommendations.

2. Purpose and Need for the Proposed Action:

The westslope cutthroat trout is ranked as S2 (imperiled because of rarity or because of other factors demonstrably making it very vulnerable to extinction throughout its range) by the Natural Heritage Network and the State of Montana. Genetically pure WCT occupy about 8% of their historical range in the western United States (Shepard et al. 2003) and less than 4% of their historical range in northcentral Montana within the Missouri River Drainage (Moser et al. 2006). The Smith River Drainage in Montana currently supports four populations of non-hybridized WCT in a total of less than five miles of stream (less than 1% of historical habitat).

Major threats to WCT include competition and hybridization with non-native rainbow trout (Leary et al. 1995; Hitt et al. 2003), competition with brook trout (Dunham 2002; Peterson et al 2004), and isolation of remaining pure populations above barriers in short headwater sections of stream. These small isolated populations are at risk of extinction from catastrophic events (e.g. fire, drought) and may eventually suffer negative consequences of genetic inbreeding (Wang et al. 2002).

Projects which restore WCT to historically occupied habitats are necessary to ensure the continued survival of WCT in the Smith River Drainage and elsewhere. In addition, efforts to stabilize and increase WCT populations would help prevent future listing of WCT under the Endangered Species Act. This proposed action would protect and expand the WCT population in Jumping Creek from less than 1/2 mile to over 2 miles of inhabited stream. The resulting increase in population size should reduce risks of extinction by reducing negative impacts from inbreeding depression (loss of genetic fitness) and the potential impacts of catastrophic events (e.g. fire, drought) . It is unlikely that this short reach of stream could support the 2,500 minimum WCT population size recommended by Hilderbrand and Kershner (2000) for long term persistence (>100 years) and it drains less than the 5.6 square miles (minimum watershed size) area recommended as a coarse filter for translocations by Harig and Fausch (2002). However, the habitat is better than that found in many WCT streams in northcentral Montana that have held WCT populations for greater than 50 years (Tews et al. 2000).

3. Benefits of the Project:

This project is intended to increase the amount of stream occupied by genetically pure WCT (an increase of approximately 30 percent in the Smith River Drainage). If implemented as proposed, this project would protect and expand a unique pure population of westslope cutthroat trout and lower the overall risk of extinction of westslope cutthroat trout in the Smith River Drainage. This project would also help achieve the goal and objectives listed in the statewide Conservation Agreement (2007) for the restoration of westslope cutthroat trout. Projects which restore WCT to their historical habitat would help prevent future listing under the Endangered Species Act and potential imposition of federal regulatory restrictions. This project would also provide a unique opportunity for anglers to fish for native trout in an accessible area of Lewis and Clark National Forest. The restored WCT population would eventually attain similar population densities and potentially larger adult sizes than the present brook trout fishery. WCT regulations are currently catch and release only. In future, total population numbers may support a change from catch and release only to some level of harvest.

G. Other Local, State, or Federal agencies with overlapping jurisdiction

Montana Department of Environmental Quality is responsible for exempting surface water quality standards for pesticide use (Section 308 of the Montana Water quality Act, MCA 75-5-308).

Montana Department of Agriculture is responsible for regulating the use of pesticides within the state of Montana (applicators licensed by this agency would be conducting the operation).

U.S. Forest Service has jurisdiction over land management in the project area. The Service is a partnering agency with the WCT Conservation Agreement and supports the proposed action.

H. Agencies Consulted During the Preparation of the EA

Montana Fish, Wildlife & Parks – Helena, Great Falls
Montana Department of Environmental Quality is responsible for exempting surface water quality standards for pesticide use (Section 308 of the Montana Water quality Act, MCA 75-5-308)
U.S. Forest Service – Great Falls, White Sulphur Ranger District

PART II. ENVIRONMENTAL REVIEW

A. PHYSICAL ENVIRONMENT

1. LAND RESOURCES **Will the proposed action result in:**	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Soil instability or changes in geologic substructure?		X				
b. Disruption, displacement, erosion, compaction, moisture loss, or over-covering of soil which would reduce productivity or fertility?		X				
c. Destruction, covering or modification of any unique geologic or physical features?		X				
d. Changes in siltation, deposition or erosion patterns that may modify the channel of a river or stream or the bed or shore of a lake?		X				

e. Exposure of people or property to earthquakes, landslides, ground failure, or other natural hazard?		X				

2. WATER Will the proposed action result in:	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Discharge into surface water or any alteration of surface water quality including but not limited to temperature, dissolved oxygen or turbidity?			X		NO	2a
b. Changes in drainage patterns or the rate and amount of surface runoff?		X				
c. Alteration of the course or magnitude of floodwater or other flows?		X				
d. Changes in the amount of surface water in any water body or creation of a new water body?		X				
e. Exposure of people or property to water related hazards such as flooding?		X				
f. Changes in the quality of groundwater?		X				2f
g. Changes in the quantity of groundwater?		X				
h. Increase in risk of contamination of surface or groundwater?			X		YES	See 2a and 2f
i. Effects on any existing water right or reservation?		X				
j. Effects on other water users as a result of any alteration in surface or groundwater quality?			X		YES	5c
k. Effects on other users as a result of any alteration in surface or groundwater quantity?		X				
l. Will the project affect a designated floodplain?		X				
m. Will the project result in any discharge that will affect federal or state water quality regulations? (Also see 2a)			X		NO	see 2a

Comment 2a: The proposed project involves application of EPA (Environmental Protection Agency) registered piscicides to Jumping Creek to remove non-native fish. A rotenone formulation would be applied at a concentration from 0.25 ppm up to a maximum of 5.0 ppm (5% formulation of Prenfish™/CFT Legumine™), as well as potassium permanganate (KMnO4) at a concentration of 1 to 6 ppm as a means to deactivate the rotenone. All piscicides kill through biochemical processes at the cellular level which make it impossible for the fish to use oxygen absorbed in the blood and needed in the release of energy during cellular respiration (Oberg 1967a, 1967b).

Rotenone is a naturally occurring substance derived from the roots of several tropical and sub-tropical plants in the bean family, Leguminosae, including jewel vine or flame tree (*Derris* spp.), lacepod (*Lonchocarpus* spp.), and hoary pea (*Tephrosia* spp.)(Finlayson et al. 2000). We plan on using a liquid formulation (Prenfish™ or CFT Legumine™) for drip stations and backpack sprayers. The powdered form of rotenone (Prentox; 5% formulation) may be mixed with gelatin and sand and placed in seeps and backwater areas of the stream. The label for Prenfish™, one of several commercial formulations of rotenone, states that rotenone would detoxify under natural conditions within one week to one month depending on water temperature, alkalinity, etc. The time for natural degradation (neutralization) of rotenone is controlled primarily by temperature, sunlight intensity during the application, and water chemistry at the site. Rotenone acts and degrades faster in warmer water (Horton 1997). In California, studies have shown that rotenone completely degrades within 1-8 weeks within the temperature range of 50-68F (10-20C) (CDFG 1994; Siepmann and Finlayson 1999). The aforementioned studies monitored breakdown of rotenone in standing waters. In running waters, rotenone would break down more rapidly because of hydrolysis (breakdown through reaction with water) and photolysis (breakdown by sunlight; Cheng et al. 1972).

To help ensure that aquatic life and water quality downstream of Jumping Creek would not be affected, rotenone would be neutralized with potassium permanganate shortly after it passes the man-made falls barrier (located 3.25 miles upstream from the confluence with Sheep Creek). Potassium permanganate has long been used for various applications in fish culture including as a control for external parasites (Lay 1971), and for detoxification of rotenone (Lawrence 1956). In addition, nearly every piscicide project in Montana currently includes the use of potassium permanganate as a neutralizing agent. However, potassium permanganate itself is toxic to fish if concentrations are too high. The toxicity of potassium permanganate to fish is dependent on the particular chemistry of the water in question. Surface waters have a potassium permanganate demand based on the amount of organic materials in the water. Successful use of potassium permanganate to detoxify rotenone is based on balancing the amount of potassium permanganate with the natural chemical demand of the water and the chemical demand caused by rotenone.
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To determine the optimal concentration (from one to six parts per million) of potassium permanganate, on-site bioassays would be performed with resident trout and water in Jumping Creek prior to treatment with piscicides. These bioassays would be used to determine the amount of potassium permanganate needed to overcome the water's potassium permanganate demand, neutralize the piscicides, and not kill fish. When the optimal concentration has been determined, a detoxification station would be set up to dispense this concentration of potassium permanganate at the downstream end of the treatment section. Water would not be considered detoxified until when sentinel fish downstream of the station show no signs of stress after four hours exposure to treated waters (*from* Prenfish™ label).

The concentration of rotenone (1-5 ppm of a 5% rotenone formulation, or 0.05-0.25 ppm pure rotenone) which would be used in this project would not be harmful to plants, most invertebrate populations, adult amphibians, reptiles, birds, or mammals, including humans, from exposure to treated water, drinking of treated water, or ingestion of treated fish. Substantial research has been conducted to determine the human health threats of rotenone. From this research it has been concluded that rotenone does not cause birth defects (Hazleton Raltech Laboratories 1982), reproductive dysfunction (Spencer and Sing 1982), gene mutation (Biotech Research 1981; Goethem et al. 1981; NAS 1983), or cancer (USEPA 1981; Tisdel 1985). Bioassays on mammals indicate that at the proposed concentrations, rotenone would have no effect on mammals, including humans that drink the treated water (Schnick 1974). The hazard associated with the short-term exposure to drinking water containing rotenone is very small because of the low concentration of rotenone used in the treatment and the rapid breakdown and dilution of rotenone. Estimates of a single lethal dose to humans are 300-500 mg of rotenone per kilogram (2.2 pounds) of body weight (Gleason et al. 1969). For example, a 160 pound (72.6 kilogram) person would have to drink over 23,000 gallons (87,000 liters) of water treated at 0.25 mg of pure rotenone per liter of water at one sitting; 0.25 mg of rotenone per liter of water is the highest allowable treatment rate for fish management.

There are no Federal or Montana numeric water quality standards for rotenone. However, BPA (Bonneville Power Administration; 2004) used the EPA method of calculating the safe level for life long (70 years) consumption of water (2 L/day) to be 0.140 ppm rotenone (0.140mg/L). Thus, the proposed treatment level of 0.05 ppm active rotenone is 2.8 times lower than the level deemed acceptable for daily consumption for 70 years.

The product label for Prenfish™ (rotenone) requires that water intakes within a mile of the treatment be shut down during treatment and detoxification. During treatment, access to the treatment area would be restricted to project personnel only. In addition, signs would be posted at areas of entry warning that the treatment is taking place and water should not be used for drinking. Detoxification measures and distance traveled (2.25 miles) would effectively contain and dilute the compounds before they reach Sheep Creek. Treated Jumping Creek water would undergo a 10 to 20 fold dilution by fresh water when it enters Sheep Creek. Potassium permanganate (the neutralizing agent) breaks down rapidly (within hours) in the environment and its toxicity would be reduced or eliminated through oxidation of its organic components with rotenone (Finlayson et al. 2000). The level of manganese (BPA 2004) determined to be safe assuming a 70 kg person is drinking 2 L/day of affected water is 0.8 ppm (0.8 mg/L). This level of manganese is equivalent to 2.3 mg/L potassium permanganate. Since our guidance is to maintain 1ppm (1 mg/L) potassium permanganate at the lower end of the detoxification zone, anyone drinking water from Jumping Creek below this point would be safe. Furthermore, anyone drinking from Sheep Creek below the confluence would experience levels 10 to 20 times less than 1 mg/L of potassium permanganate because of dilution.

To reduce the potential risks associated with the use of rotenone, the following mitigation measures and monitoring efforts would be employed:

1. A pre-treatment assay (terms) would be conducted to determine the lowest effective concentration and proper spacing of drip stations.
2. Project personnel will be trained to safely use rotenone and potassium permanganate including the actions necessary to deal with spills. Personnel would use the proper Personal Protective Equipment (PPE), wear rubber gloves, safety goggles, respirators, and would follow directions on product labels.
3. Only the amount of rotenone that is needed for immediate use would be held near the stream.
4. Prior to the use of piscicides and potassium permanganate, USFS personnel would be notified and signs would be posted at access areas. Signs would include information on the project, the chemicals to be used, and precautions.
5. Sentinel fish would be used within the project area to determine and monitor the effectiveness of the treatment and the effectiveness of the neutralization.

Comment 2f: The risk that rotenone would enter and be mobile in groundwater is minimal. The ability of rotenone to move through soil is low to slight (Finlayson et al. 2000). Rotenone moves less than one inch in most types of soils, except for sandy soils where the movement is slightly more than three inches. Rotenone is strongly bound to organic matter in soil, so it is unlikely that rotenone would enter the groundwater (Dawson et al. 1991). Furthermore, any rotenone that enters groundwater would continue to be diluted by water already present in the aquifer. The chance for exposure to rotenone from groundwater in this application is minimal since there are no domestic wells which draw water from Jumping Creek. In addition, sampling by MFWP personnel in domestic wells closely associated with lake treatments have failed to find rotenone or any inert products of rotenone formulations (Don Skaar, MFWP; personal communication). Potassium permanganate (the neutralizing agent) breaks down rapidly in the environment and its toxicity would be reduced or eliminated through oxidation of its organic components with rotenone (Finlayson et al. 2000).

3. AIR Will the proposed action result in:	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Emission of air pollutants or deterioration of ambient air quality? (also see 13 (c))		X				
b. Creation of objectionable odors?			X		NO	3b
c. Alteration of air movement, moisture, or temperature patterns or any change in climate, either locally or regionally?		X				
d. Adverse effects on vegetation, including crops, due to increased emissions of pollutants?		X				
e. Will the project result in any discharge, which will conflict with federal or state air quality regulations?		X				

Comment 3b: Formulated rotenone has aromatic solvents that can be construed as objectionable. Odors associated with these compounds would dissipate rapidly, and any impacts to air quality would be short term and minor. Also, applicators are required to use NIOSH respirators for rotenone specifically due to these hazards.

4. VEGETATION Will the proposed action result in:	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Changes in the diversity, productivity or abundance of plant species (including trees,		X				

shrubs, grass, crops, and aquatic plants)?						
b. Alteration of a plant community?			X			4a
c. Adverse effects on any unique, rare, threatened, or endangered species?		X				
d. Reduction in acreage or productivity of any agricultural land?		X				
e. Establishment or spread of noxious weeds?		X				
f. Will the project affect wetlands, or prime and unique farmland?		X				

Comment 4a: Some trampling of vegetation may occur along the stream corridor as workers move about in the project area. Impacts would be minor and short term.

5. <u>FISH/WILDLIFE</u> **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Deterioration of critical fish or wildlife habitat?		X				
b. Changes in the diversity or abundance of game animals or bird species?			X		NO	5b
c. Changes in the diversity or abundance of non-game species?			X		YES	5c
d. Introduction of new species into an area?		X				
e. Creation of a barrier to the migration or movement of animals?		X				
f. Adverse effects on any unique, rare, threatened, or endangered species?		X				
g. Increase in conditions that stress wildlife populations or limit abundance (including harassment, legal or illegal harvest or other human activity)?		X				
h. Will the project be performed in any area in which T&E species are present, and will the project affect any T&E species or their habitat? (Also see 5f)		X				
i. Will the project introduce or export any species not presently or historically occurring in the receiving location? (Also see 5d)		X				

Comment 5b: This project involves killing non-native brook trout in Jumping Creek. After completion of the project, Jumping Creek WCT would be moved back to the treated portion of stream upstream of the barrier. The bulk of recolonization, through natural reproduction after the transfers, would likely occur within 5 years of treatment.

Comment 5c:
Aquatic Invertebrates: In general, most studies report that aquatic invertebrates, except zooplankton are much less sensitive to rotenone treatment than fish (Schnick 1974). One study reported that no significant reduction in aquatic invertebrates was observed due to the effects of rotenone (Houf and Campbell 1977). In all cases, the reduction of aquatic invertebrates was temporary, and most treatments used a higher concentration of rotenone than proposed for this project (Schnick 1974). In a study on the relative tolerance of different aquatic invertebrates to rotenone, Engstrom-Heg et al. (1978) reported that the long-term impacts of rotenone are mitigated because those insects that were most sensitive to rotenone also tended to have the highest rate of recolonization.

Because of their short life cycles (Anderson and Wallace 1984), good dispersal ability (Pennack 1989) and generally high reproductive potential (Anderson and Wallace 1984), aquatic invertebrates are capable of rapid recovery from disturbance (Boulton et al. 1992; Matthaei et al. 1996). Headwater reaches of Jumping Creek would not be treated with piscicides and would provide a source of aquatic invertebrate colonists. In addition, recolonization would include naturally aerially dispersing invertebrates from downstream (non-treated) areas of Jumping Creek (e.g. winged stages of mayflies and caddisflies).

Amphibians:

Jumping Creek supports a robust population of Columbia spotted frogs (*Rana luteiventris*). Other amphibian species which may be present in the project area are boreal toads (*Bufo boreas*), boreal chorus frogs *(Pseudacris maculata*), and tiger salamanders (*Ambystoma tigrinum).*

Rotenone can be toxic to some gill-breathing larval amphibians, but is not harmful to adults, except tiger salamanders (Schnick 1974). Grisak et al. (2007) found a no effect level for adult spotted frogs of 4.5 ppm Prenfish™ (rotenone) and 50% of long toed salamander adults died after 96-h exposure to <3.5 ppm Prenfish™ (rotenone).

All of the amphibian species that could be present in the project area prefer to breed in the standing water of ponds, rather than in streams. The areas where rotenone use is proposed in this project are primarily running water. Also, most amphibian larvae (tadpoles) would have already undergone metamorphosis to the less vulnerable adult stage when the proposed stream treatment would occur.

Reptiles: Western terrestrial garter snake (*Thamnophis elegans*) is the only reptile known to occur in the project area, but it is not aquatic and would not likely be affected by this action.

Birds and Mammals: Birds and mammals in the project area may be exposed to rotenone through direct exposure, drinking of piscicide-treated water, or by eating fish killed by piscicides. Bioassays on mammals indicate that at the proposed concentrations, rotenone would have no effect on mammals that drink the treated water (Schnick 1974). In addition, large and small mammals that eat fish killed during the project would be exposed to a thousandth of the median lethal dose (EPA 2007). The hazard associated with the short-term exposure to drinking water containing rotenone is very small because of the low concentration of rotenone used in the treatment and the rapid breakdown and dilution of rotenone. Moreover, rotenone was used for many years to control grubs on the backs of dairy and beef cattle. Because fish populations in Jumping Creek will be reduced for at least 5 years, there will be temporary impacts on any fish-eating birds and mammals present in the project area, such as great blue heron, merganser, osprey, and mink. Also, if temporary reductions in aquatic invertebrates occur, insectivorous species such as American dippers may be impacted to the extent that they rely on aquatic invertebrates for food. Aquatic invertebrate communities typically recover rapidly from disturbance and impacted birds and mammals are mobile and would likely emigrate to nearby habitats until full recovery of the aquatic community. Treatments would be timed so that livestock grazing allotments adjacent to the proposed treatment area are unoccupied. If this is not possible, every effort would be made to work with allotees to minimize exposure of livestock to treated waters (e.g. temporary movement to adjacent pastures, etc.). In addition, the public would be restricted from entering treated waters until sentinel fish show no sign of stress for 4 hours.

Summary of effects on nongame species: It is expected that impacts on all non-game species would be minor and/or temporary.

Mitigation: Prior to treatment the project area would be surveyed at likely amphibian breeding locations using Montana Natural Heritage Program protocols. If no individuals of species found in the pre-treatment surveys are found in post-treatment surveys; then populations would be re-established from neighboring areas.

B.HUMAN ENVIRONMENT

6. NOISE/ELECTRICAL EFFECTS Will the proposed action result in:	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index

a. Increases in existing noise levels?		X				
b. Exposure of people to severe or nuisance noise levels?		X				
c. Creation of electrostatic or electromagnetic effects that could be detrimental to human health or property?		X				
d. Interference with radio or television reception and operation?		X				

7. <u>LAND USE</u> **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Alteration of or interference with the productivity or profitability of the existing land use of an area?		X				7a
b. Conflicted with a designated natural area or area of unusual scientific or educational importance?		X				
c. Conflict with any existing land use whose presence would constrain or potentially prohibit the proposed action?			X			7c
d. Adverse effects on or relocation of residences?		X				

Comment 7a: In 2005, Jumping Creek had 209 (S.E. 148) angler days of use based on the statewide angling pressure survey. This action would have no effect on angling pressure in the lower reaches. It would result in a short-term decrease in fishing opportunities above the barrier. The restored WCT population would eventually attain similar population densities and potentially larger adult sizes than the present brook trout fishery. WCT regulations are currently catch and release only. In future, total population numbers may support a change from catch and release only to some level of harvest.

Comment 7c: –Treatments would be timed so that livestock grazing allotments adjacent to the proposed treatment area are unoccupied. If this is not possible, every effort would be made to work with allotees to minimize exposure of livestock to treated waters (e.g. temporary movement to adjacent pastures, etc.).

8. <u>RISK/HEALTH</u> <u>HAZARDS</u> **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Risk of an explosion or release of hazardous substances (including, but not limited to oil, pesticides, chemicals, or radiation) in the event of an accident or other forms of disruption?			X		YES	8a
b. Affect an existing emergency response or emergency evacuation plan or create a need for a new plan?		X				
c. Creation of any human health hazard or potential hazard?			X		YES	see 8a
d. Will any chemical toxicants be used?			X		YES	see 8a

Comment 8a: There is a minor risk of spilling rotenone or potassium permanganate directly into the stream. Rotenone and potassium permanganate are normally diluted in water prior to dripping into the stream at a constant rate by using a device that maintains a constant head pressure, called a “drip station” (an electrically operated auger may also be used to

dispense dry permanganate into the stream). If undiluted rotenone or potassium permanganate is spilled, or if a drip station tips into the stream, a higher concentration of chemical in the stream would result. This increase in concentration of piscicide would be short term and would dissipate rapidly. Short-term increases in concentration of toxicant should not affect rates of application of potassium permanganate downstream of the man-made barrier. Moreover, sentinel fish downstream of the detoxification station would be monitored and permanganate levels adjusted as necessary. Both product labels list measures for cleaning spills such as absorbent materials and containers for spill clean-up. We would comply with the labels for spill contingency.

There is a minor risk of a health hazard for project personnel associated with eye or skin contact with the commercial formulation of rotenone (Prenfish™, CFT Legumine™). There is a significant health hazard for project personnel associated with inhalation or swallowing of undiluted rotenone. Personnel would be trained in the proper use of piscicides by a licensed pesticide applicator. Personnel would wear the proper Personal Protective Equipment (e.g. respirators, goggles) and follow all procedures specified on Piscicide Use Labels and Material Safety Data Sheets (MSDS). Project personnel would be provided with MSDS for piscicides and neutralizing agents used in this project. Eyewash bottles would be available for personnel operating drip stations and working with rotenone and potassium permanganate. All applicators would have handheld radios. Risks to applicators are substantially greater than risks to the general public because of the necessity of handling the compounds at full strength.

Rotenone formulations typically contain volatile organic compounds (xylene, trichlorethylene (TCE), toluene, and trimethylbenzene), and semi-volatile organic compounds (naphthalene, 1-methyl naphthalene and 2-methyl naphthalene). The organic compounds disappear before rotenone dissipates, typically within 1-3 weeks (Finlayson et al. 2000). The volatile organic compounds don't accumulate in the sediment; naphthalene and methyl naphthalene accumulate temporarily in the sediments (CDFG 1994; Siepmann and Finlayson 1999). TCE (a carcinogen) concentrations are expected to be within drinking water standard levels immediately following treatment. None of these constituents would be present at levels that can be expected to have any effect on animal life. Other potential effects of rotenone including effects of diluted product and long-term impacts are discussed in Section 2a of this EA.

9. COMMUNITY IMPACT Will the proposed action result in:	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Alteration of the location, distribution, density, or growth rate of the human population of an area?		X				
b. Alteration of the social structure of a community?		X				
c. Alteration of the level or distribution of employment or community or personal income?		X				
d. Changes in industrial or commercial activity?		X				
e. Increased traffic hazards or effects on existing transportation facilities or patterns of movement of people and goods?		X				

10. PUBLIC SERVICES/TAXES/UTILITIES Will the proposed action result in:	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Will the proposed action have an effect upon or result in a need for new or altered governmental services in any of the following areas: fire or police protection, schools, parks/recreational facilities, roads or other public maintenance, water supply,		X				

sewer or septic systems, solid waste disposal, health, or other governmental services? If any, specify: _______________						
b. Will the proposed action have an effect upon the local or state tax base and revenues?		X				
c. Will the proposed action result in a need for new facilities or substantial alterations of any of the following utilities: electric power, natural gas, other fuel supply or distribution systems, or communications?		X				
d. Will the proposed action result in increased used of any energy source?		X				
e. Define projected revenue sources		X				
f. Define projected maintenance costs		X				

11. AESTHETICS/RECREATION **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Alteration of any scenic vista or creation of an aesthetically offensive site or effect that is open to public view?		X				
b. Alteration of the aesthetic character of a community or neighborhood?		X				
c. Alteration of the quality or quantity of recreational/tourism opportunities and settings? (Attach Tourism Report)		X				
d. Will any designated or proposed wild or scenic rivers, trails or wilderness areas be impacted? (Also see 11a, 11c)		X				

12. CULTURAL/HISTORICAL RESOURCES **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Destruction or alteration of any site, structure or object of prehistoric historic or paleontological importance?		X				
b. Physical change that would affect unique cultural values?		X				
c. Effects on existing religious or sacred uses of a site or area?		X				12c
d. Will the project affect historic or cultural resources?			X			12d

Comment 12c: The project is located in an area that was historically used by Native American tribes. There would be no ground breaking activities associated with the proposed action and there are no known cultural or religious ceremonies planned in this area during the proposed time frame.

Comment 12d: This project would help preserve westslope cutthroat trout, the State Fish of Montana and the only trout native to the upper Missouri River.

13. SUMMARY EVALUATION OF SIGNIFICANCE Will the proposed action, considered as a whole:	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Have impacts that are individually limited, but cumulatively considerable? (A project or program may result in impacts on two or more separate resources, which create a significant effect when considered together or in total.)		X				
b. Involve potential risks or adverse effects which are uncertain but extremely hazardous if they were to occur?		X				
c. Potentially conflict with the substantive requirements of any local, state, or federal law, regulation, standard or formal plan?		X				
d. Establish a precedent or likelihood that future actions with significant environmental impacts will be proposed?		X				
e. Generate substantial debate or controversy about the nature of the impacts that would be created?			X			13e
f. Is the project expected to have organized opposition or generate substantial public controversy? (Also see 13e)			X			See 13e
g. List any federal or state permits required.						13g

Comment 13e: We do not expect this project to generate substantial controversy. However, to mitigate the potential controversy associated with the use of piscicides or any other aspect of this project, MFWP will inform the interested public and discuss the proposed project with landowners prior to making a decision. The USFS grazing alottee and the downstream landowner have already been contacted to discuss issues associated with the project. A copy of this EA will also be given to them.

Comment 13g: The following list of permits would be required:

- **DEQ 308 – Montana Department of Environmental Quality (authorization for use of a piscicide)**

PART III. ALTERNATIVES

Four alternatives were considered during preparation of the Environmental Assessment.

Alternative 1 – Rescue of WCT without restoration of Jumping Creek.

Under this alternative, brook trout would not be removed from Jumping Creek. WCT would be captured and transferred to a remote fishless drainage. Specific local genetic adaptations to Jumping Creek would likely be lost over time (Ashley et al. 2003). The consequences of the loss of these adaptations is unknown but may negatively affect the long term persistence of this rare population In addition, this alternative does not protect or restore WCT in Jumping Creek and will decrease the probability of native WCT surviving in the Smith Drainage over the long term.

Alternative 2 - Proposed Action

The proposed action includes removing the existing fish populations in Jumping Creek between 46.9826°N, 110.8011°W and 47.0009°N, 110.7705°W.

The predicted benefits of Alternative 2 include:

- Increase in total miles of non-hybridized WCT inhabited stream in the Smith River Drainage from 5 to 6.5 miles (30% increase).
- Protection and increase in robustness of current non-hybridized WCT population in the headwaters of Jumping Creek.
- This project supports the three goals of WCT management in Montana as stated in the Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout in Montana (MFWP 2007):

  1) Ensure the long-term, self-sustaining persistence of each subspecies distributed across their historical ranges as identified in recent status reviews.

  2) Maintain the genetic integrity and diversity of non-introgressed populations, as well as the diversity of life histories, represented by remaining cutthroat trout populations.

  3) Protect the ecological, recreational, and economic values associated with each subspecies. Projects like this help prevent future listing of WCT under the Endangered Species Act.

Alternative 3 - Mechanical Removal

Removal of non-native fish from Jumping Creek would not be possible using backpack electrofishing equipment because of the complexity of habitat (e.g. springs and large woody debris). Suppression efforts using electrofishing over the last three years in Jumping Creek have not significantly decreased numbers of brook trout. In addition, numbers of WCT have not responded positively to these efforts.

Alternative 4 – No Action

Native WCT trout in Jumping Creek would go extinct. Any rare alleles or genetic adaptations to the Jumping Creek drainage would be lost forever.

PART IV. ENVIRONMENTAL ASSESSMENT CONCLUSION SECTION

A) Is an EIS required? No

This environmental review demonstrates that the impacts of this proposed project are not significant. The proposed action would benefit westslope cutthroat trout in the Smith River Drainage with minimal impacts on the physical, biological, or the human environment. Therefore, an EA is the appropriate level of analysis and an EIS will not be prepared.

B) Public Involvement.

This EA will be posted on the MFWP internet site (http://fwp.mt.gov/publicnotices/), and mailed directly to interested persons. A scoping letter will be mailed to private landowners up to 5 miles downstream of the proposed treatment. In, addition, scoping letters will be mailed to Native American tribes, non-governmental organizations, and other interested parties.

The USFS grazing alottee and the downstream landowner have been contacted to discuss issues associated with the project. A copy of the EA would be given to them.

C) Duration of the comment period?

The comment period is 30 days. Public comment will be accepted through July 31, 2008

D) Name, title, address, and telephone number of the Person Responsible for Preparing the EA Document.

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